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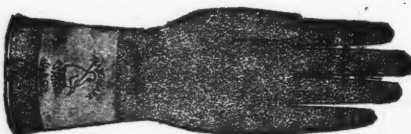
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VOL. I.—6TH YEAR.

SYDNEY: SATURDAY, FEBRUARY 1, 1919.

No. 5.

AN INAUGURAL LECTURE.¹

By H. G. Chapman, M.D. (Melb.),

Professor of Pharmacology, University of Sydney.

Part I.

The institution of the Chair in Pharmacology by the Senate of our University represents a desire on the part of the governing body to widen the scope of university education in New South Wales. While the Chair is included within the Faculty of Medicine, the studies that it will promote, will form part of that wider education which it is the privilege of the University to diffuse throughout New South Wales. The increased attention that will be given to the study of pharmacology will not only be reflected in the practice of the medical profession, but will augment the sum total of the knowledge of the whole community. Since the Professor of Pharmacology will be a member of the Faculty of Medicine, and since the new laboratories will be placed in the Medical School, the Department of Pharmacology will no doubt be usually considered as forming a part of the University specially designed for the training of medical students and its tuition presumed to be entirely professional. The subject of pharmacology has indeed formed a part of the medical course of most of the universities of Europe since the middle ages. Our Medical School will now contain four professorships, namely, those of physiology, of anatomy, of pathology and of pharmacology. The professors in these subjects will direct the training of medical students during the greater part of three years of their medical education. Their aim will be to inculcate logical reasoning, habits of observation and the use of experiment, as well as to impart medical information about the construction of man, about the behaviour of the body, about its diseases and about the remedies which heal these ailments.

The establishment of the Medical School was not forgotten at the beginning of the University of Sydney. The Select Committee appointed by the Legislature in 1849 recommended the endowment of five chairs, one of which was to be a chair of anatomy, physiology and medicine. When the University came into existence in 1850 no Medical School was founded, as it was thought advisable to devote attention solely to those subjects which were thought at that time to be the basis of intellectual culture. In 1859 an attempt was made by Sir Charles Nicholson (to whose munificence Sydney University owes many benefactions) to provide proper training for those desirous of obtaining a degree in the Faculties of Medicine and Law. This attempt was frustrated by Professor John Smith, who had been created Dean of the Faculty of Medicine, and by the other professors. This opposition called forth a formal declaration by the Senate, who regretted "that the professors should have considered themselves justified in adopting so extreme a step as that of entering a protest against proceed-

ings which the Senate, in the unquestionable exercise of its prerogative, had thought fit to take with reference to the initiation of the necessary measures for the erection of a Medical School in connexion with the University, as expressly contemplated by the *Act of Incorporation*." The Senate also declared that "it was unable to depart from its resolution to establish a Medical School." Every Australian student will feel a debt of gratitude to Sir Charles Nicholson and those other members of the Senate who showed such a desire to make it possible for the youth of this country to be trained for the learned professions within an Australian University. The foundation of a school of medicine within the University of Sydney was hastened in 1873 by the proposal to establish what has now become the Royal Prince Alfred Hospital. The Act incorporating the hospital gave power to the Directors to institute a Medical School. At one time it was contemplated to place the school within the hospital, and some plans exist showing what accommodation was considered adequate at the time these proposals were put forward. During the negotiations between the Senate of the University and the Directors in regard to a site for the hospital within the University grounds, it was stipulated that an area of two or three acres should be reserved for the Medical School. Ultimately, however, the decision prevailed to incorporate the Medical School within the University, and to place the building in the immediate neighbourhood of the remainder of the schools of the University, while the site at the hospital for the Medical School was utilized for recreation grounds for the patients. The community should be ever thankful that the school of medicine was placed in such close contact with the rest of the University. It has enabled an intimate association to exist between the teachers of the Medical School and those of the other faculties. It has impressed upon the students their position within the University rather than within the Medical School. It has taught us all, staff and student alike, to recognize our portion in this institution, aiming at promoting increased knowledge within the State. The association of the students of all faculties together assists in widening the range of their education. It is the spirit in which the student learns rather than the matter that is acquired which determines the cultivation of the mind. No step would have been more disastrous than the inclusion of the Medical School within the hospital, away from the University. The University aids in making those studying medicine well-informed citizens as well as skilful practitioners of the healing art.

In 1878 the Senate considered a proposal for the establishment of a medical course, and debated whether such a course should embrace five years' study or two years of preliminary work. On the motion of Sir Arthur Renwick it was decided that a complete scheme of study, lasting for five years, should be instituted. Shortly after the magnificent bequest of Mr. Challis, the legislature made it possible to found a Medical School, and in 1882 Sir Thomas Anderson

¹ Delivered at the University of Sydney on October 21, 1918.

Stuart was selected to occupy a combined Chair of Anatomy and Physiology. In that same year the Royal Prince Alfred Hospital was formally opened, and the Medical School and the hospital date their beginning from that period. The first classes were held in 1883. There is no need to detail the progress of the Medical School in the last thirty-five years. In that period it has grown until it has become the fourth largest medical school within the British Empire. At the present time there are more than 600 students in the Faculty of Medicine, and more than one-third of the total number of undergraduates proceeding to a degree in the University of Sydney receive their instruction within the Medical School building. The phenomenal success of the Medical School has been in part due to the growth and prosperity of the State of New South Wales, but no small share of its success should be ascribed to the masterly organization of its Dean, who has occupied this important position since the institution of teaching in medical subjects. Those who have had some acquaintance with the other medical schools within Australia, can appreciate the advantage that Sydney has possessed in the guidance of such an able administrator. When our citizens consider the policy which has been followed within the school from its inception, they must pay their homage to the wisdom of the mind from which it has emanated. Few seem to have realized in the early years of the school what a useful institution it would become. When the Medical School was built in 1887 many persons thought that it was constructed on a scale far too large for the needs of the community. Yet that building has been already enlarged, and if it is to continue to provide accommodation for the tuition of the students it will need further additions immediately. Even at the present time there are some who fail to recognize how the rapid growth of the Medical School will endure for a number of years. The medical man yields definite service to the community. The sick are everywhere aware how much their chances of recovery are increased by proper medical attention. In every part of the State those who are affected by disease strive to obtain medical assistance. There is thus a continuous demand for the services of the medical man. Until the outbreak of the war a continual stream of doctors trained in other lands flowed to our shores. If the yearly registers of the Medical Board of this State are examined it will be found that they contain the names of as many doctors who have applied for registration from abroad as from Australian medical schools. It will thus be evident there will be an opportunity for increased numbers of the youth of this community to enter the medical profession. Surely Australia's sons and daughters should be offered the first opportunity to engage in healing her suffering people. The Medical School will inevitably increase further in size and in the number of the students. In a few years there will be a thousand students, and before many years two thousand students. There seems no reason to suppose that the population of the State of New South Wales will not continue to grow at the same rate as has been observed in the last few years. Should this growth in population continue, the aug-

mentation of the Medical School will consequentially take place.

The institution of the Chair of Pharmacology has been undertaken by the Senate to cope with the expansion of the Medical School. The Senate has wisely recognized that only four of the teachers receive the rank of a professor, and that it is advisable to accord a higher status to those engaged in teaching within this faculty. Recently the Faculty of Medicine has urged upon the Senate the desirability of instituting two new chairs in the Faculty of Medicine—a Chair of Surgery and a Chair of Medicine. This proposal has been referred to the Professorial Board, where it has encountered a unanimous opposition from the professors of the other faculties. It has been seriously urged that the growth of the Medical School has been detrimental to the University. Those of us who have spent the best years of our lives in developing the instruction within the Medical School resent any imputation that our work has been harmful to the University. We have always thought that the Medical School was part of the University, and that progress in the Medical School was regarded as progress within the University. We have considered that our instruction added just as much to the welfare of the people of the State as instruction of an equal number of persons in the Faculty of Arts. It is held widely at the present time that the University exists for no small section of the community, but that its purpose is to afford every citizen opportunities of gaining information about the work that occupies each day. Education is no longer considered by many as the acquisition of classical, historical, mathematical and philosophical learning. Better education should enable any person to grapple more successfully with what is met during each day's toil. It would thus appear to be erroneous to hold that the instruction of 500 medical students in anatomy and physiology and in the more technical professional subjects is without influence on the intellectual life of the community, and is detrimental to the progress of the University, since the money that has been spent on these students has not been expended in providing more teaching in Latin or Greek, in French, Spanish or Japanese, in mathematics or in philosophy. I would appeal to those whose fathers, brothers or sons have received assistance from the medical men on the plains of Egypt, the hills of Gallipoli or in the fields of France. I would ask them whether the money which has been utilized in enabling those of this land to minister to the injured, sick and wounded among their kinsmen, has been wasted by reason of expenditure in a direction in which it was not required. Surely there will not be many who will hold that it has been no part of the functions of this University to promote the training of the medical profession. The question is not whether the Medical School is too large, too richly endowed with laboratories and class-rooms, and provided with too numerous classes, but whether each student at the present time receives a sufficiency of instruction in each part of the medical curriculum. Those who have had to work within the Medical School know of the crowded class-rooms continuously in use; they know how some parts of the work are repeated time after time, even unto six times, since there are no class-room which

will contain a larger number of the students that must be taught the subject; they will know how class after class pours into the laboratories from nine o'clock in the morning until five in the evening during most days of the week. They will be aware how the number of hours of instruction attended by each student falls far less than those which are considered necessary in other parts of the world, despite the ceaseless rush of classes. A single instructor teaches thirty, forty, fifty, or even sixty students in the laboratory at one time. These facts surely demonstrate that the accommodation and staff provided in the Medical School are none too large for training the great number of students. Most of us in this community are proud—and justly proud—of our medical graduates. We hear that they have acquired a reputation for skill and for promptness in emergency. We recognize that their success in carrying on their profession will be determined by the extent of their knowledge. If we raise the standard of professional knowledge, then we diminish the amount of sickness and suffering in the community. If we give medical men a better knowledge of the paths by which infectious diseases are spread, the medical profession will be in a better position to prevent the transmission of disease. Let it be clearly understood that improved training within the Medical School means a lessening in the mortality in the State of New South Wales. Not only so, but it means a diminution in the amount of pain that is experienced by the whole community. Further, it will diminish the sorrow and grief which ever follow in the footsteps of disease. We need in the Medical School more class-rooms, more laboratories and a greater quantity of equipment for carrying on investigation. A University only carries on a small part of its function when it limits its teaching to what has already been ascertained. A University must advance knowledge, must afford to its students the occasion for investigation along new paths, and so enable those who come within its walls to master that branch of learning to which they devote attention. The Medical School needs more class-rooms, since a greater number of hours is needed for the instruction of the individual student. It is impossible to impart instruction in a satisfactory way in practical classes to more than thirty students. Instruction can only be given in a routine manner, and no attempt made to ascertain how each individual student is making use of what he learns. Not very long ago a representative of the students of one of the medical years complained to the Dean that no student had more than three minutes' conversation with the teacher during each class. When the teacher was asked for an explanation he pointed out that, as he had sixty students and the class lasted two hours, he doubted whether each student even received three minutes' individual instruction. It is not possible to obtain any satisfactory knowledge of the technique of the medical sciences without personal instruction. While the average medical student receives sufficient information to enable him to carry on the work of treating most patients, there is little opportunity to train those gifted with the highest powers of mind in a more thorough manner. We find few original contributions to medical science from the graduates of our University. It is not that our graduates lack intelligence, it is not that they lack perseverance, it

is not that they lack opportunity, but it is due to a lack of familiarity with the more technical aspects of the fundamental sciences. It has not been possible with so many classes awaiting instruction to select those students who could work at a more rapid rate than their fellows and to give them a more advanced course. As a consequence, the most gifted student has rarely a knowledge of chemistry, or of physiology, or of pathology which would enable him to undertake research work in the laboratory. The student of the first year medicine who possesses an aptitude for chemistry has no opportunity of attaining to such a knowledge of chemical analysis as will enable him to do any chemical work connected with the advancement of medicine. The most gifted student in the department of physiology cannot receive enough instruction in physiological methods to enable him to examine with the microscope preparations made with his own hand. This restriction in the work of the Medical School has been due to insufficient numbers on the teaching staff.

PHAGEDÆNIC ULCER OF WARM CLIMATES.

By W. McMurray, M.D.,
Dermatologist, Sydney Hospital;
and
F. O. Stokes, M.B.,
Medical Officer, Taree Hospital.

Malignant ulcers of the skin occur in many tropical and sub-tropical countries. They have been named after the country in which they occurred. The disease was first described by Vincent in 1857, under the name of *l'ulcère de Mozambique*, occurring principally among the Kaffirs. Five years afterwards Capuis observed the same disease in Guiana. Since then numerous writers have described it by other synonyms, *viz.*, Gabon ulcer, Aden ulcer, ulcer of Yemen, seen especially among the negroes of Sennaar, Kordofan, and Darfour, among the Arabs of Zanzibar and Massouah, ulcer of Annamite, seen in Annam and Tonkin, ulcer of Cochinchina, Congo ulcer, ulcer of Madagascar, ulcer of Guadeloupe, ulcer of New Caledonia, etc.

After studying descriptions of these different ulcers and comparing their characteristics, most authorities have arrived at the conclusion that they are all the same disease, called and described under the name of phagedænic ulcer of warm climates, or tropical ulcer.

The disease is essentially one of the tropics. Few, if any, genuine cases have been reported in temperate zones.

So far as we know, no case has been described as occurring in Australasia, and this is our reason for bringing the following under notice.

The disease appears to be endemic and sporadic in the Taree district and the country drained by the Wallamba River, in the North Coast of New South Wales, 144 miles from Sydney.

Altogether, we have collected nine cases, all of which we have seen personally. They are classified as follows:—

Females.	Age.	Affected Part.	Males.	Age.	Affected Part.
M.M.	17	Right upper arm	E.G.	10	Left fore arm
F.G.	10	Right leg	G.S.	10	Left fore arm
E.T.	8	Right leg	J.N.	10	Left wrist
A.F.	Adult	Right leg	B.B.	2	Right fore arm
M.H.	6½	Left fore arm			

Eight of these patients have come under our observation during the past six years. The first, Miss M., was seen 17 years ago; the exact nature of the disease was not then recognized. In six the upper and in three the lower extremities were affected—seven children and two adults were the victims. One case ended fatally.

We will give a brief history of the cases as they were reported to us, and then describe in detail two which at present under treatment.

(1) The first patient was Miss M., aged 17, residing at Forster, Cape Hawke, seen on March 8, 1899. She had then an extensive ulceration of the anterior part of the right upper arm. The condition had been present for ten months. After five months' treatment it healed slowly, leaving a smooth scar. She said the condition was produced by the bite of a black spider. Its nature was not recognized then.

(2) F.G., a girl, aged 10. The lesion began as a small lump on the right leg. This broke down into an ulcer, which spread slowly, involving the true skin from the ankle to the knee. Healing took place after eight months.

(3) E.G., a boy, aged 10, second cousin of the preceding patient. He resided five miles across the Wallamba River. Five years ago his left arm became affected by extensive ulceration, involving the true skin from the shoulder to the elbow joint. Healing occurred after ten months.

(4) B.B., aged 2 years, residing at Tuncurry, near Cape Hawke, was seen on December 29, 1914. Her mother stated that a swelling began on the flexor surface of the right forearm four months previously. This was incised. A sore formed, which broke down and ulcerated, slowly destroying the skin and exposing the fat. The destruction was complete from the wrist to the elbow joint. The limb was dressed with various antiseptics. The ulcer always had an unhealthy appearance, and showed no tendency to heal. It did not seem painful, except when dressed. The condition was considered a gummatous ulceration, and was treated as such. The complement deviation test applied to the blood of each parent was negative. The mother had never had any miscarriage. The patient passed from under our observation, and we heard subsequently that she died.

(5) G.S., a boy, aged 10 years, residing at Sidebottom, five miles from Taree. He suffered from a chronic ulceration on the dorsal surface of the left forearm, extending from its middle down to the knuckles and round the wrist. The skin at the margins was brown and undermined for from 5 to 10 cm. Healing took place after eleven months.

(6) E.T., a girl, aged 8, residing at Gooloongolok River, on the Hawkes Bay water. She had a chronic ulceration of the right leg and was an inmate of Taree Hospital for several months. Healing took place after a year's treatment.

(7) A.F., an adult female, had the usual early symptoms, and finally came into hospital. The ulcer was situated on the right instep, and spread, in spite of varied treatment, to the size of the palm of the hand from 5 cm. above the ankle down to the metatarsal bones. Finally, after repeated swabbings with carbolic and treatment with peroxide of hydrogen, it healed.

(8) The following case is a good example of this malady, which we will describe in detail.

Jas. N., aged 10, resides in Forster, near Cape Hawke (Taree district). His mother states that she has eleven children, all of whom are well. She has had no miscarriages. Her youngest son is the patient. Up to three months ago he always had excellent health, when a pimple appeared in the back of the left wrist. It gradually enlarged to the size of a pea, forming a painless swelling, not itchy, only slightly tender in pressure. During the next fortnight the pimple gradually became flatter, and at the end of that time was level with the surrounding skin. The wrist then became swollen, and there was a circumscribed, reddened, glazed area of skin, presenting the appearance of cellulitis. The surface was slightly scaly. The mother brought him to the local doctor, who prescribed a lotion, which was continued for four weeks. The oedema of the hand and forearm increased,

and, becoming alarmed, the mother brought him to one of us. As there was evidence of pus formation the dorsum of the hand was incised in two places and the wounds swabbed out with pure carbolic acid. He was admitted into Taree Hospital and treated with fomentations. The progress of the case was unsatisfactory, the necrosis continuing to spread slowly. Five weeks later the accompanying photograph was taken, which gives a good idea of his present state.

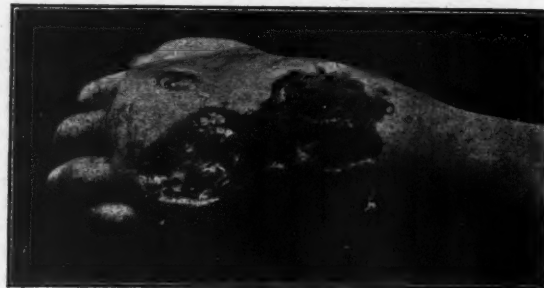


FIGURE I.

On examination, his general aspect is unhealthy, and he has an earthy tint. His appetite is good, and he sleeps well. The hand is much swollen, and has a dusky, angry look. There is extensive, deep ulceration, with considerable destruction of the soft structures where the incision was made in the ulnar side.

The necrosis extends to the tendons. It measures 2.5 cm. in its longest diameter, and 1.5 cm. across its greatest width. At the site of the radial incision the destruction of tissue is not so marked. The discharge is sero-purulent and sufficient to soak the dressings at the end of twelve hours. The edges of the ulcer, spreading laterally and vertically, are undermined, but not indurated. The floor and margins of the ulcer are covered with a greyish white exudate, except at two places where it is vascular and bleeds easily when touched. Over the dorsum of the hand and wrist there is a dark, black, dry slough, which measures 3 cm. long and 2 cm. wide, and seems to be stationary.

What strikes one most forcibly is the absence of pain and constitutional disturbance considering the extensively destructive process.

The hand was dressed with normal saline solution for 12 hours. A smear was taken in the usual way, and examined with the dark field illumination for the *Spirochæta schaudinni*. This we found, and our observation was confirmed by Dr. Tidswell and Mr. Young.

Prowazek was the first to discover this spirochæta in this disease. He named it *Spirochæta schaudinni*. His description is as follows:—

It is a spiral organism, very actively motile, its length varying between .10 μ and 22 μ , though much shorter or longer individuals may be met with. The organism possesses a well-marked, undulating membrane, which is best brought into evidence by using Löffler's flagellar stain. A delicate, rather short flagellum is occasionally seen at one of the extremities. Forms undergoing longitudinal division are frequently observed. Prowazek distinguishes male and female. Various shaped regressive and rest forms may be seen.

According to Prowazek *Spirochæta schaudinni*, apart from being more slender, has the greatest resemblance to the spirochæta which Prowazek and Hoffmann have described in the form of balanoposthitis.

Examination of the blood was undertaken by Mr. Young, who gives the following report:—

Wassermann reaction—positive.

Physical characters—

Colour—good.

Coagulability—good.

Rate of flow from puncture—good.

Microscopic findings—

Red cells—

Enumeration—5,800,000.
 Polkilocytes—none.
 Polychromasis—present.

Leucocytes—

Enumeration—62%.
 Polymorphonuclear cells—62%.
 Large mononuclear cells—nil.
 Small lymphocytes—30%.
 Large lymphocytes—3%.
 Eosinophile cells—3%.

Further Progress of the Case.—1.25 arseno-benzol was given intravenously. This was followed by no constitutional disturbance. Very little difference was noted in the ulcer, except that it appeared cleaner. The centre sloughs separated and left a large granulating surface, extending 8 cm. above the wrist to 2.5 cm. above the bones of fingers dorsally, and almost encircling the wrist. The edges were still sloughing and undermined with necrosed tissue, as seen by lifting the edges with a probe. Intravenous injections of tartar emetic are now being given. He has had three injections, and shows considerable improvement.

A week later 0.15 arseno-benzol was administered; no result observed up to two days later. The extensor tendons were distinctly seen, at first bare and later covered with healthy granulations. The edges of the wound were raised and oedematous for at least 2.5 cm. all round. The hand was hyperextended at the wrist, but the application of a splint corrected this.

The patient has a good appetite and is non-febrile. The pulse and urine are normal. He gets up every day.

(9) M.H., aged 6½, residing at Forster, on the Wallamba River, 20 miles from Taree. The house is situated on a high hill, surrounded by bush. Her father and mother are healthy, and never had any serious illness. The mother has had three children, no miscarriages. The patient is a bright, healthy-looking child. At three years of age she had measles and pneumonia, and no other illness until May 25 (four months ago), when her mother noticed a red blotch on the middle of the child's left forearm on the extensor aspect. It was about the size of a half a crown, and remained stationary for a fortnight. It was not tender to touch, except when roughly handled. The mother took her to a doctor at Nablac, who prescribed fomentations for a week. This brought the red blotch up to a "head" like a boil, and it then commenced to discharge a little and looked as if it would break. She then brought her to Taree Hospital, where, on examination, the left arm was found to be swollen, red and tender over an area of 8 cm. on the middle of the extensor surface. Three incisions were made, from which flowed a sanious discharge. The subcutaneous connective tissue was seen to be necrosed and caseous. The wound was swabbed out with pure carbolic and dressed. Five weeks later the two outer incisions were healing slowly. The internal one kept slowly spreading, undermining the skin, which had a dusky brown colour. The subcutaneous tissue down to the fascia was necrosed and converted into a dirty grey slough. This was swabbed again with pure carbolic. One month later the destruction continued, and the picture gives a fair representation of the present condition. The wound was dressed with normal saline (see Figure II.).

Smears were taken from the ulcer and cultivated. *Staphylococcus aureus* was the only organism present.

Under the dark field illumination numerous spirochaetes were seen. They were very motile and difficult to keep in the field, much thinner and longer than the *Sp. pallida*. Thin spirals could be seen distinctly, but not counted. At one time as many as five could be seen in the field, three of which were attached to one of the blood corpuscles, and resembled streamers blown by the wind; their movements were very active.

In her case the Wassermann reaction was negative.

Blood examination—

Physical characters—Colour, good; rate of flow from puncture, good.

Microscopic findings—Red cells: enumeration, 5,600,000.

Hæmoglobin, 95; colour index, 0.8.

Leucocytes—Enumeration, 4,200. Differential count: (a) Polymorphonuclear cells, 34%; (b) large mononuclear cells, 5%; (c) small lymphocyte 35%, large lymphocyte 23%; (d) eosinophile cells, 3%.



FIGURE II.

Dr. Tidswell has been good enough to see two of these patients with us. The following is his report and remarks:—

The various bacterial agents to which *ulcus tropicum* was formerly attributed by different observers have now been displaced by *Spirochæta schaudinni*, described by Prowazek and confirmed by later writers. In specimens from two of the cases described above, spirochaetes were observed under dark-ground illumination. They showed few and rather elongated coils and an active, lashing movement. Although we took a number of preparations we did not succeed in obtaining stained examples. The examinations revealed only pus cocci, which we regarded as due to secondary infection. We did not find any bacterial microbes (e.g., acid-fast bacilli) which could be looked upon as having any causal relationship to the disease. We did not find fusiform bacilli, such as some authorities regard as the associates or growth forms of the spirochaetes. In ascribing the disease to *S. schaudinni*, we are aware that spirochaetes of various kinds are liable to be found as secondary invaders of open sores. But in view of the clinical characters of the disease, and the fact that the spirochaetes found had the appearance of that described by Prowazek, we see no reason for doubting the nature of the complaint. The disease is known to occur in various, perhaps all, tropical and sub-tropical regions, and has been recorded in temperate zones, as in Greece and Southern Italy. We believe its range has now been extended by its discovery in this country.

TOPOGRAPHY OF TAREE DISTRICT.

By Mr. S. R. Beatty,

District Government Surveyor.

Forster and Cape Hawke are, practically, one, and Taree is the principal town on the Manning River, although the settlement along that river extends for about 60 miles inland from the coast.

Taree is the only place where temperature records have been kept for any length of time, but the records

there may be taken as being approximately correct for the other localities, the most distant of which are Gooloongolok and Forster, each 22 miles away.

In addition, it may be stated that the humidity of all these places is very great—probably about 70%, assuming saturation = 100%.

The features common to all these places are: (a) they are badly infested with mosquitoes and bush ticks, (b) they are all, more or less, surrounded by dense ti-tree scrubs, and (c) the local residents are largely employed in the cutting, handling and shipping of timber.

Taree.—A town of about 1,200 inhabitants. On low rise on north bank of Manning River—a salt-water tidal stream—adjoining extensive deep alluvial flats, under intense cultivation for maize, sorghum, potatoes and vegetables. Soil in town decomposed shale overlying at shallow depth stiff clay and sandstone, all originally timbered with gum, oak and ironbark; all timber now killed within about a mile of the town.

Forster.—A village and scattered fishing and timber-getting settlement of about 500 persons. On coast at eastern side of entrance from Wallis Lake to the ocean. Fairly level and flat land; soil sandy, with (formerly) extensive ti-tree swamps now nearly all drained. Timbers: gum, blackbutt, honeysuckle, ti-tree; dense ti-tree, myrtle scrub and coastal flowering scrubs. Population principally engaged in fishing and at local sawmill.

Tuncurry.—A small village of about 200 inhabitants on western side of entrance to Wallis Lakes. All level land; soil almost pure, with extensive tracts of low-lying land covered with cabbage-tree palms. Timbers: stunted gum, stringybark and blackbutt and dense ti-tree scrub. About half a mile distant from sand hummocks along the coast, behind which are extensive, open moors. Population engaged in fishing and the timber trade, there being a local sawmill.

Gooloongolok.—A small village of about 20 houses on Gooloongolok River—a navigable tidal stream—about eight miles from its entrance into Wallis Lake. Undulating country, very heavily wooded with hardwoods (gum, ironbark, tallow-wood, blackbutt, brush box) and dense myrtle and ti-tree scrub. Sandstone formation; a narrow strip of slightly alluvial soil along the river; balance principally a clayey loam overlying shale and trap rock. Residents engaged in timber trade, principally in connexion with the local sawmill.

Sidebottom.—A scattered settlement, engaged upon dairying and timber-getting along the valley of Koo-

ringat Creek—a fresh-water stream. Undulating country, heavily timbered with hardwoods and dense scrub and brush; comparatively small areas cleared, and settlement restricted to five or six houses about a quarter of a mile apart. Sandstone formation. Soil: black loam, overlying heavy clay and shale.

Wallingat.—A small, scattered, timber-getting settlement, along Wallingat River—tidal and navigable—about six to eight miles above its junction with Wallis Lake. Flat country, very heavily timbered with hardwoods, dense scrub and brush. A little dairying is carried on, but comparatively small areas have been cleared and log-hauling for sawmills is the principal industry. Soil: sandy and clayey loam, overlying heavy clay. Narrow salt-water swamps over river frontage.

Remarks.

The disease, so far as we know, is peculiar to the Taree district; no other cases have been reported elsewhere in Australasia. It does not seem to be very contagious. No one has contracted it from a patient suffering from the disease.

The occurrence in children on exposed parts would point to the fact that it was caused by some insect, biting spider, or blood-sucking vermin. In the last case reported, M.H., aged 6½, the malady began in May. This is winter time, when no flies or ticks are about. The spider family, as the first patient pointed out, seems to be the most likely offender.

Its occurrence in exposed parts of the extremities could be accounted for by the fact that children are often restless at night and throw off the clothes.

The cases described in detail show particularly good family histories, so one can easily exclude any hereditary specific taint.

The Wassermann reaction being strongly positive in one of the cases, and the finding of the spirochætae, conclusively proved the disease to be a spirochætal infection.

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Place.	Latitude (South).	Longitude (East).	Mean Annual Rainfall (Inches.)	Distance from Coast (Miles.)	Temperature (in Shade).				
					Yearly Average in Shade.	Summer in Shade.	Winter in Shade.	Highest Known in Shade.	Lowest Known.
Taree	31° 58'	152° 29'	45.11	10	65°	74.8°	55.1°	112°	24°
Manning River—									
Forster (Cape Hawke) .. .	32° 12'	152° 30'	46.06	On Coast					
Tuncurry	32° 12'	152° 30'	46	On Coast					
Gooloongolok	32° 15'	152° 29'	46.6	13					
Sidebottom	31° 59'	152° 29'	45	6					
Wallingat	32° 14'	152° 29'	46.5	8					

Reports of Cases.

A FATAL CASE OF POISONING BY A LARGE DOSE OF HEROIN HYDROCHLORIDE.

By W. R. Boyd, M.D., Melb., M.R.C.S.,

Honorary Physician to In-Patients, Melbourne Hospital.

G.S., *æt.* 59, retired warehouseman, was first visited on October 24, 1918. He complained of diarrhoea, which had commenced three days before, and which he attributed to the eating of a pie at the Caulfield Cup meeting. There had been a tendency to constipation for the previous two years.

After three days in bed the diarrhoea, which was at first severe, gradually improved, but the patient's general condition caused anxiety; he became increasingly nervous and irritable, and on the night of October 28, 1918, he began to wander in his mind, and was restrained with difficulty. On the morning of the 29th he was almost unmanageable, and had delusions and illusions of various kinds.

At 12.30 p.m. on October 29, 1918, he was given 1.2 grammes (20 grains) of bromide of potash, and, having had no effect in quieting the patient, it was followed an hour later by a cachet supposed to contain barbiton, 0.48 grm. (grs. viii.), and *ac. acetyl salicyl.*, 0.3 grm. (gr. v.).

Four cachets had been ordered in the prescription, and subsequent analysis of one of these showed that it contained 0.418 gramme (6.97 grains) of heroin hydrochloride, which had been dispensed instead of barbiton.

In less than one hour the patient was sleeping, and it was noted by the nurse an hour later that he was very tremulous, and that his face was twitching and skin acting freely.

At 5 p.m. he was sleeping soundly, but both arms and legs were frequently jerked, with strong, clonic, muscular spasms.

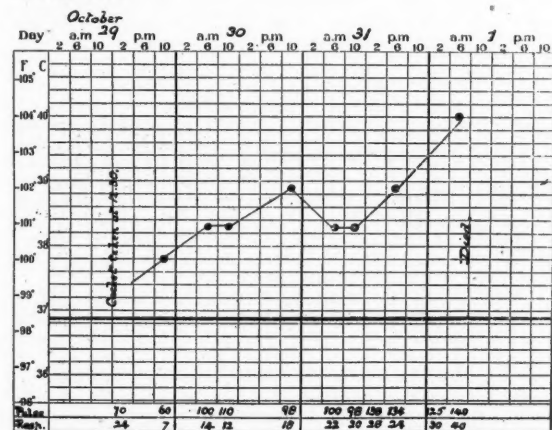
By 9.30 p.m. the condition was markedly changed. The respiration became laboured, stertorous and very slow (seven per minute), the face was pallid, dusky and the spasms of the limbs persisted. The pupils were contracted to pin points, and the patient could not be roused, though the corneal reflex persisted.

The muscles of the back of the neck were rigid, and on lumbar puncture clear fluid, not under increased pressure, escaped.

The condition continued unchanged all night, and at 6 a.m. the temperature was 38.3° C. (101° F.), the pulse-rate 100 and the respirations 14.

The comatose condition persisted, but was peculiar in that an apparent awakening could always be produced by attempting to flex the head on the chest. This would give rise to an opening of the eyelids, an expressing of "looking" and sometimes an attempt to raise the body into a sitting posture.

The temperature gradually rose and the pulse and respirations increased as a patchy broncho-pneumonia developed at both bases.



The patient gradually sank, and died at noon on November 1, 1918, about 70 hours after the heroin had been taken.

Shortly before death the temperature was 40° C. (104° F.), the pulse-rate 140 and the respirations 40.

Remarks.

The cause of the diarrhoea was probably some ptomaine irritant, and may have been contained in the racecourse pie. The delirium was possibly caused by an intestinal toxæmia, or by the sudden cessation of stimulants, of which the cirrhotic condition of the liver, as revealed at autopsy, would suggest a free and regular supply.

The rapidly developing coma, the marked slowing, stertor and irregularity of breathing, the moist skin, the pallid, dusky face, the pin-point pupils and the muscular spasms and the rigidity of the muscles at the back of the neck pointed to narcotic poisoning, uræmia, pontine hæmorrhage or cerebro-spinal meningitis as possible causes of the condition.

The cerebro-spinal fluid was clear, and not under increased pressure.

The urine had a specific gravity of 1.008, with no albumin, no sugar and no casts in the centrifugation deposit.

There were no confirmatory neurological signs of a hæmorrhage into the pons and the blood pressure was low.

There was no suspicion of any large quantity of morphine or other narcotic having been taken.

An examination of the contents of one of the cachets by Dr. Price, the Government Analyst, showed that it contained *ac. acetyl salicyl.* and 0.418 gramme (6.97 grains) of hydrochloride of heroin, and that there was no barbiton present.

In a letter sent to me by Dr. Price, he set out the results of his analyses:—

The police handed me in connexion with the above investigation a cardboard box containing one whole cachet and the fragment of another.

The cachet contained 12.62 grains of a fine, white crystalline powder, which submitted to quantitative analysis. I found that it was composed of a mixture of heroin hydrochloride, 6.97 grs., together with acetyl-salicylic acid. No veronal was present.

Portions of the organs of deceased, when analysed for alkaloids, showed the presence of $\frac{1}{64}$ grain of morphine only.

This case illustrates two points:—

- (1) A large dose of heroin (probably 0.48 gramme or 8 grains) did not cause death until 70 hours after ingestion.
- (2) Heroin is more tetanizing and less narcotic than morphine.

The latter point is strongly confirmatory of the conclusions drawn by Stockman and Dott from animal experiments made by them with morphine and its derivatives and reported in the *British Medical Journal*, 1890, Vol. II, p. 189. These were that "the tetanizing power of acetyl and diacetyl morphine is much greater, while their narcotic action, although visible after smaller doses, is never so profound.

"Increase of dose, instead of deepening the narcosis, brings on tetanic symptoms.

"The depressant action of small doses on the cord, and especially in the respiratory centre, is very much greater than that of morphine."

Notes of Autopsy, by J. T. Brett, M.R.C.S., L.R.C.P.

Post-mortem examination of the body of G.S., made November 2, 1918, showed:—

Externally.—Heavy build, well nourished; slight rigor mortis; post-mortem staining of decubent parts; no signs of violence.

Internally.—Trachea intensely engorged; mucous membrane of dark purple colour; no mucus. Lungs distended and voluminous; much engorged with dark blood; hypostatic congestion, with partial consolidation on both sides and some oedema. Heart presented some excess of epicardial fat, and fatty infiltration about the apex; right side distended with dark fluid blood and a little pale clot. The muscle was of good colour and consistence; the valves were apparently competent; the aorta and coronary vessels were natural. The liver showed atrophic "hobnail" cirrhosis; no gall stones. The spleen and kidneys were free from any pathogenic lesion. The stomach contained a little fluid, presenting nothing distinctive in odour or appearance. The intestines contained a little semi-fluid fæces; no inflammation

of either serous or mucous coats. The skull was thick and eburnated. The brain was free from any hemorrhage, its pia injected, the vessels full, the ventricles distended with clear fluid, its substance rather oedematous. The vessels were natural.

The stomach, its contents and portions of the organs were reserved for analysis.

The mode of death was comato-suffocation.

Reviews.

THE AUSTRALIAN ARMY MEDICAL CORPS IN EGYPT.

Sir James Barrett has written a book entitled "The Australian Army Medical Corps in Egypt."¹ This book will be read with great interest by people for many different reasons. Some will read it because they were in Egypt with the Australian Army Medical Corps, and they will want to learn Sir James Barrett's views of the organization and of the manner in which the work was conducted. They will also want to learn Sir James Barrett's version of the early trouble. Others will read it to inform themselves of the events during the period of 1914 and 1915 in Egypt, even if they have made up their mind previously from the stories they have heard as to what they are prepared to believe and what they cannot accept, even if Sir James tells them. All will find the book engrossing and full of lively interest. But we return to the natural questions. Why was the book written? And should it have been issued at the present time? The reader may perhaps answer these questions to his own satisfaction. We cannot.

There is much in the book with which we agree. Sir James Barrett considers that the Red Cross Society should be placed under military authority during war time; and so do we. He holds that the critical visitor, without any intention of performing military work or of carrying out any useful function of a constructive kind, should be kept at home. He or she becomes a nuisance when he or she pokes his or her nose into military or Red Cross organizations in busy war time. This is quite true, and, provided that the author does not include in the captious visitor the irritatingly useful person who has an uncomfortable knack of picking out the gross defects of an undertaking and calling public attention to real shortcomings, we agree with him. We cordially agree with his rooted objection to a multiplicity of societies and funds undertaking the same class of work, and also with the demand to deal with the problem of venereal disease in the army from the point of view of prevention. When we come to his criticism of the organization of the Australian Army Medical Corps in connexion with special departments, we find cause for some disagreement. The responsible authorities were, in our opinion, negligent in not equipping pathological laboratories for both stationary and field service, under the management of the most expert pathologists and bacteriologists in Australia; they should have organized orthopaedic and neurological services, also under competent experts, and they should have provided for efficient co-ordination of the special departments. According to Sir James Barrett, the chief defect of the Australian Army Medical Corps was the lack of attention given to the prevention of disease. To remedy this he would have changed the title of the sanitary officer to that of prophylactic officer. He recognizes the need for an ophthalmic clinic at the No. 1 Australian General Hospital, and also the need for an adequate dental staff, but he, like the responsible authorities elsewhere, failed to grasp the necessity of having every branch of medical and surgical science represented in different services, and of co-ordinating these services one with another. In the last place, we disagree entirely with the author in his advocacy of keeping the troops of one State separate from the troops of another. There is one great achievement of the Australian Imperial Force. It is that the men drawn from all the six States have fought, suffered, died, triumphed and won together. The artificial separation into States disappeared; they were all Australians, and the members of the Australian Imperial Force have taught the

Commonwealth that the divisions are as unnecessary as they are artificial. The only people who benefit by a disunited Australia, are the professional politicians. Whether Australia would be less happy with fewer paid legislators remains to be seen.

The greater part of the book is occupied by a description of the early history of the No. 1 Australian General Hospital, and a full measure of praise for the Officer Commanding, Lieutenant-Colonel W. Ramsay Smith. He also describes in glowing terms the achievements of General Williams in Egypt in the year 1915. The second subject dealt with is the organization of the Red Cross Society, Australian Branch. He follows precedent in putting the Australian Branch before the British Red Cross Society. We often wonder why this obvious misdirection is perpetuated. As long as the Australian organization is a branch of the mother society the main title should be that of the mother society; but the other by no means infrequent error in description, of assuming the original title without reference to the fact that the Australian Branch is, after all, only a branch, is equally obvious.

The book is freely illustrated and is easily read. It may stand as part of the medical history of the war, but in this allowance must be made for the fact that much of its contents represents the personal views of one man, a distinguished and very capable man, but still one man.

MEDICAL DIAGNOSIS.

In "Aids to Medical Diagnosis,"¹ Arthur Whiting has produced a useful little volume. The book is quite scientific in its spirit and matter, and the aids to diagnosis are real ones. The second chapter is devoted to infectious diseases and the important matters of the differential diagnosis of diphtheria and other forms of throat affections and the discrimination between the different rashes of the exanthemata are capably and clearly set forth. The section on diseases of the heart has been prepared with care, and has been brought right up to date. The various irregularities of the pulse are clearly set forth, and their relations to pathological conditions in the heart is stated in simple language.

Other sections deal with the digestive tract, the urinary organs, the blood, the lungs and nervous systems, and are all helpful and reliable. The book is intended for the use of those who already possess a knowledge of systematic medicine, whether advanced students or practitioners of medicine, and it can be confidently recommended to such persons.

PNEUMONIC INFLUENZA.

The Minister of Public Health of New South Wales notified the Director of Quarantine on January 27, 1919, of the presence of a case of pneumonic influenza in the State, and asked the Director of Quarantine to take steps to proclaim New South Wales an infected State. This action was taken in accordance with the resolution of a Conference held on November 27, 1918. It was based on the following report of Consultative Committee:—

We certify that this day we examined a number of patients in No. 4 Australian General Hospital, Randwick.

We find that the patients are suffering from a similar disease to that which existed on the *Medic* and *Sardinia*, of which ships two of our number had experience.

In each case the history shows that the disease was contracted in Melbourne, or from contact with those cases, with the exception of one mild and doubtful case.

In our opinion, the disease is that which in this country is known as pneumonic influenza.

On January 26, 1919, the Chief Health Officer of Victoria consulted with the Advisory Committee, and arrived at the conclusion that the local epidemic was not of the same disease that had ravaged New Zealand. It was, therefore, agreed that there was no reason why Victoria should be declared an infected State. On January 28 the Advisory Committee decided that pneumonic influenza existed in Melbourne. The Premier of Victoria subsequently requested the Federal Government to proclaim Victoria an infected State.

¹ The Australian Army Medical Corps in Egypt, An Illustrated and Detailed Account of the Early Organization and Work of the Australian Medical Units in Egypt in 1914-1915, by Lieutenant-Colonel James W. Barrett, C.M.G., M.D., M.S., F.R.C.S., and Lieutenant P. E. Deane, A.A.M.C.; 1917. London: H. K. Lewis & Company, Limited; Crown 8vo., pp. 255, with 33 illustrations.

² Aids to Medical Diagnosis, by Arthur Whiting, M.D.; Second Edition; 1918. London: Baillière, Tindall & Cox; Foolscap 8vo., pp. 167, illustrated. Price, 3s. net.

The Medical Journal of Australia.

SATURDAY, FEBRUARY 1, 1919.

A Retrospect.

III.

Orthopædic Surgery.

During the past year the orthopædic surgeon has recognized the opportunity offered by war injuries to extend and perfect his practice. This branch of medical science has changed its character during the course of the war, and has developed almost independently of general surgery. Of the more recent advances, perhaps that involved in the surgery of the peripheral nervous system is the most evident. The surgeon now undertakes secondary suture of a divided nerve with considerable confidence, and attempts to bridge a gap by transplantation. It has been shown that recovery of function is the rule, and that failure is the exception, when the operative conditions are favourable. The technique of nerve repair has been simplified in many particulars. Authorities are agreed that approximation without tension and with a minimum of trauma is desirable; that the field of operation should be left free from blood clot or oozing; that torsion, especially of the sciatic nerve, should be avoided if a maximum sensory and motor result is to be provided and that after-treatment should be prolonged and applied carefully. The correctness of the principle of applying rest in the after-treatment of muscles separated from their nerve supply has been challenged, but the experimental evidence on which this view is based is not convincing enough to justify a departure from the ordinary routine practice.

While electrical treatment of muscles in the state of paresis has again become popular with many surgeons, it is still uncertain whether the contraction of a muscle in this condition is beneficial or otherwise. It is claimed that in practice this method of treatment is followed by ultimate recovery. Whether the recovery is or is not due to the treatment has yet to be determined.

Transplantation of bone has again attracted much attention. The use of autogenous grafts has been

shown to be desirable, but perhaps not indispensable. Boiled bone has been used with success.

Injuries to joints present many difficulties to the orthopædic surgeon. Arthroplasty as a means of overcoming an undesirable ankylosis has at times yielded satisfactory results. The difficulty of establishing freedom of movement associated with the requisite degree of stability in an excised articulation has led orthopædic surgeons to recognize that a small or moderate range of controlled and definite movement is preferable to a large range, with instability and inaccuracy of control. The treatment of flail joints following excision for sepsis is rendered unsatisfactory on account of the fact that a considerable amount of bone and muscle attachment has been lost. Apparatus for the fixation of joints at useful angles, by providing a certain degree of stability, minimizes the disability, while operative treatment, by shortening the gap between the ends of the opposing bones, had led to improvement in some cases. Many authorities have recently urged that, with a less radical operation and adequate drainage, the chances of the retention of a useful limb are enhanced.

The practice of shortening the longer limb in the case of inequality in the length of the lower limbs has been widely adopted, both in military and civil practice. The essential for success in this procedure is a good fixation of the divided ends of the bones.

The study of muscular movements has resulted in a better understanding of their physiology, and observations in cases of injury to nerves has contributed to our knowledge of co-ordination. Reconstructional surgery has taught that the treatment of the loss of mental and moral tone in soldiers, depressed by the strain of war and released from its care and danger, can be carried out in no better way than by providing the patients with useful occupation and exercise of the neuro-muscular organization.

Gynaecology and Obstetrics.

No marked advances have been registered during the past twelve months in gynaecology and midwifery. There has been a definite falling-off in the number and importance of the articles dealing with this specialty. Among the subjects which have received attention may be mentioned organo-therapy. The contributions in this connexion, however, lack the essence of careful, scientific experiment. The observations

of Cornell on placental tissue as an efficient galactagogue represent an exception.

The number of operations devised for the rectification of displacements of the uterus is steadily increasing, and is now approaching one hundred.

The campaign for the early diagnosis of cancer of the womb has met with but scant success, and there is a tendency to revert to less radical procedures than formerly. Percy has written many articles on the efficiency of heat treatment, either alone or in addition to operation. Radium and X-ray treatment have not yielded the success anticipated. They have, however, proved useful as adjuncts to operation. On the other hand, Howard Kelly has been converted to the treatment of myomata of the uterus by X-rays and radium in the place of hysterectomy, especially in old women and in those suffering from diseases such as goitre, diabetes or chronic heart or lung affections. Some success has been claimed of transplantation of the ovaries in cases in which the uterus has not been removed.

In puerperal infections intra-uterine medication and instrumental local treatment are regarded by many with disfavour. The advantages and dangers accompanying the use of pituitary extract in labour have been freely discussed. The employment of morphine and scopolamine has many friends and many enemies, but even the staunchest advocates would limit this practice to selected cases. Williams has come to the conclusion that obstetricians may abandon the induction of premature labour in the treatment of contracted pelvis in the majority of cases in favour of elective Caesarean section or pubiotomy.

Many writers have demonstrated that the morbidity and mortality of incomplete febrile abortions are reduced by allowing Nature to expel the uterine contents and by abandoning the curette in favour of the finger. Many obstetricians have condemned the artificial induction of labour, although this procedure has some warm supporters.

Diseases of Children.

In the specialty of pædiatrics lively interest has been evinced in the treatment of pertussis by means of vaccines. Vaccines have been employed in many clinics with conflicting results. The evidence, however, is rather in favour of their use. It is usually held that the vaccines, to be effective, should be auto-

genous, freshly prepared and given in large doses. Some observers have claimed good results from stock vaccines.

Zingher has shown, on the basis of the von Schick test, that toxin-antitoxin mixtures injected in infants, susceptible children and adults raise their immunity toward diphtheria. This procedure in prophylaxis has been applied in institutions, infant schools and the like with apparently good results. It is now regarded as certain that injections of antitoxin alone have but little prophylactic power.

Further evidence has been adduced to prove the close connexion between nephritis and various focal infections of the tonsils. The necessity for close attention to the diet is emphasized by authorities, especially in cases where the urinary secretion is of importance, as in pyelitis. Renal efficiency tests, by means of phenolphthalein, have been shown to be of value in children.

Several cases of tuberculous infections following ritual circumcision have been reported. Definite statements have been made that in infants contact with tubercular material always results in infection. The value of the several skin tests has been upheld. Both human and bovine tuberculin are employed in diagnosis. Tuberculin and helio-therapy, combined with general systemic treatment, apparently yield the best clinical results in tuberculosis in children. A definite place has been given to X-rays in both diagnosis and treatment.

Many observations have been made on the growth and nutrition of new-born and of older children. The rôle played by calcium in metabolism, its effect on fat absorption and on the general health of infants when supplied in excess have been dealt with by many authorities. Unfortunately, the conclusions arrived at up to the present have been somewhat contradictory.

In regard to hypertrophic pyloric stenosis, the profession is divided in its opinions. Some specialists pin their faith on immediate operation, while others favour medical treatment. Atropine, especially when given in large doses, has been proved to be almost a specific in the milder cases of this condition and in the many ailments of the hypertonic infant.

Biological Chemistry.

The shortage of shipping, which has entailed a di-

minution in the quantity of food carried to Europe, has led to many investigations upon the effects of different diets upon the weights and bodily fitness of persons engaged in many kinds of work. These studies have been made in the light of the increased knowledge of the numerous factors concerned in the assimilation and metabolism of foodstuffs gained in the last few years. The results of this research are only just becoming available, so that the time is not yet ripe for judicious discussion of the general conclusions. Attention may be directed to those investigations on the presence of substances in fresh vegetables, fruits and meats, which are concerned in preventing the onset of scurvy. The last decade has witnessed the numerous experiments which have justified the belief that certain materials, usually present in minute quantity in foods are necessary for the continued growth and for the healthy maintenance of the bodies of a number of animals, including man. To these substances the name of vitamins has been given. Two classes of these food-accessory bodies have been universally recognized. An anti-neuritic group is present in yeast, eggs, whole wheat meal, peas and cabbage, and is absent from tinned meat, butter, lard, margarine and cod-liver oil. Many recent studies have proved that these vitamins are not destroyed by the usual processes of cooking, but are diminished or destroyed by heating at 120° C., as employed in many manufacturing industries. In butter, eggs, animal fats and cod-liver oil there is found another class of these bodies, which is concerned with the growth of the tissues. These vitamins appear to be absent from vegetable oils. When these fat-soluble vitamins are absent from the diet, young animals fail to increase in weight and adult animals show wasting. The eyes are also affected with the curious, rare condition of xerophthalmia. Many observers have thought that their experiments show that there is yet another group of these vitamins, which is concerned with the prevention of the scorbutic state. These substances are presumed to be present in all fresh vegetables, fruits and meats. They are considered to be absent from dried vegetables, from meats which have undergone "preservation" and from dried seeds. McCollum and Pitz have brought forward many observations in support of their hypothesis that scurvy is not due to the absence of any

specific vitamin, but is caused by the constipation due to the physical state of certain foods. They are of opinion that the use of laxatives prevents the onset of scurvy in guinea-pigs fed upon diets which are usually supposed to lack the anti-scorbutic elements. Harden and Zilva have shown, on the other hand, that they can separate from lemon juice a substance which is able, in quite small amounts, to prevent the onset of scurvy in guinea-pigs fed upon diets which readily induce the disease. They have succeeded in separating the citric acid from lemon juice without diminishing the antiscorbutic properties of the juice to any material degree. They have demonstrated that this treated juice is of little value in curing guinea-pigs affected with scurvy or in warding off the disease when exhibited previously in massive doses. Harden and Zilva have induced scurvy in monkeys in which the signs and symptoms are closely similar to those of the human ailment. In these animals they have succeeded in curing the disease by administering enormous quantities of treated lemon juice. Harden and Zilva are thus led to support those who criticize the evidence of McCollum and Pitz, and who assert that milk is the anti-scorbutic element in their experiments.

Conditions of acidosis or acidemia have been freely discussed during the last few years. They are attributed to the addition of quantities of acids to the circulating blood. The acids are assumed to be formed in the tissues as a result of abnormal metabolic processes, usually believed to be associated with lessened consumption of oxygen. It has been ascertained that the tissues of the human body can only perform their physiological functions when in contact with blood whose reaction may be regarded for practical purposes as neutral. When acids or alkalies are added to the blood, chemical reactions occur, which neutralize the excess of acid or alkali, provided the amount be not too great. In conditions of acidosis the human organism excretes the excess of acid, while the blood is maintained at what is practically neutrality. The amount of acids that may be added daily to the blood in some disorders of metabolism is much greater than the quantity needed to render blood an acid fluid. On this account too much stress cannot be laid on methods which measure the alkalinity of blood at any particular moment. In diabetes, for example, hydroxybutyric acid is neutralized in part by a greatly enhanced production of ammonia,

Attempts are, however, being made to estimate the degree of acidity of the blood for clinical purposes. Donald van Slyke and his collaborators have made some valuable studies on the determination of carbonic acid in plasma, on the electrometric titration of plasma, on the significance of the bicarbonates in plasma, on the relation between the tension of carbon dioxide in the alveolar air and the acidity of the blood plasma and on the connexion between the excretion of acid and the alkaline reserve. For their estimations they have made use of an ingenious device to enable them to separate the gaseous carbon dioxide from a small quantity of plasma and to measure the quantity of carbon dioxide set free. These investigators, in common with W. M. Bayliss, Henderson, Sorensen and others, consider that measurement of the concentration of bicarbonate in plasma provides sufficient data for inferring the behaviour of plasma on the addition of acids. Other investigations, as Benjamin Moore, consider that proteins play a part of such importance in neutralizing acids that attention to the bicarbonates alone leads to inaccurate conceptions. In accord with their belief, they emphasize the necessity of titrating the blood plasma by means of indicators, which make evident the changes in hydrogen ion concentration. They further point out that a given quantity of plasma can react with a much greater quantity of acid than a similar quantity of a solution of bicarbonate of soda, without exceeding certain limits of change in hydrogen ion concentration.

Ophthalmology.

In the sphere of ophthalmology some important work has been carried out on the subject of localization of the visual functions. Gordon Holmes has succeeded, at least tentatively, in mapping out differentially the calcarine area, and has placed the macular centre posteriorly, and that for each concentric retinal zone to the periphery, more and more anteriorly. His anatomical studies have been based on observations in a large number of occipital war injuries.

A classical account of hypophyseal tumours has been compiled by Harvey Cushing and Clifford Walker. These authors have called attention to the perimetric record of the several types of hemianopsia.

During the past year or two the attitude toward iritis and kindred infective conditions of the eye has

been considerably modified. Syphilis, tuberculosis and rheumatism no longer are regarded as the chief causal factors. The septic focus theory now commands attention. Lang has claimed that in a large proportion of his cases the condition is produced by *pyorrhæa alveolaris*. Others seek the origin of the condition in a septic tonsil, an inflamed appendix, or toxic absorption from the intestinal tract. The matter is still *sub judice*.

Sweet's method of localizing metallic foreign bodies in the eye by means of Röntgen rays is held to yield accurate results. The apparatus is quite simple and the method is highly ingenious. Armed with these data, and with one of the newer patterns of giant magnet, surgeons obtain better results in the extraction of foreign bodies are obtained now than formerly.

Among the operative procedures may be mentioned Heisrath's combined excision of conjunctiva and tarsus for trachoma. Hailed by many as a radical and permanent cure, it has been found by other operators, like all things mundane, to have its limitations and failures. It remains, notwithstanding, a useful operation, often leading to excellent results.

Elliot's corneo-scleral trephining for glaucoma is the most widely known of the many recent attempts to obtain a safe filtering cicatrix, with the view to the mastering of this baffling disease. It has been extensively tried in many countries, and operators are not unanimous concerning its value or its safety. The alleged dangers of late infection have induced some to abandon it.

Smith has done signal service by the introduction of the operation of intracapsular extraction of cataract. This procedure often yields the happiest results in cases otherwise inoperable.

The work of Allan C. Wood, of Philadelphia, on ocular anaphylaxis, with special reference to the ætiology of sympathetic ophthalmitis, is interesting and of importance.

Oto-Rhino-Laryngology.

Oral sepsis and its influence as a cause of general systemic maladies has received much attention during recent years. The tonsils are now recognized as nurseries for pathogenic organisms. It has been shown that tonsils apparently not diseased may contain hidden foci in the form of caseous deposits. It seems that these sources of

infection have more than a local significance. It is now also recognized that albuminuria in young subjects may be traced to the same cause. Nasal sinus suppuration and other pathological intra-nasal conditions are now being regarded as an important factor in the aetiology of eye diseases. G. Orman Ring, of Philadelphia, has conducted important work on the association of disease of the eye and that of the nasal accessory sinuses. He shows that in some cases diseases of the eye, ranging from errors of refraction to the most serious acute and chronic changes of the eye, may depend on intra-nasal disease. This work contains further proof, if any additional evidence were necessary, of the unwisdom of patients trusting the treatment of their eyes to persons without medical knowledge, even in the matter of prescribing spectacles.

Some valuable work has been conducted by G. de Parrell, of Paris, on the results of anacusia. It seems that cases which have hitherto been regarded as hopeless from the point of view of treatment, such as chronic atrophic sclerosis, may be greatly influenced. He points out that sonorous sound causes a stimulation of the vasomotor nerves, which is manifested functionally by a powerful response to the vascular system, an energetic vaso-dilatation. The entire auditory tract and the adjacent regions become irrigated by the increased blood flow. This leads to a hypernutrition of the mucous membrane of the ear, and, as a result, the process of atrophic degeneration, when it exists, is arrested. If there is a chronic suppuration, the modification in the circulation brings about a suppression of the blood stasis and favours the infiltration of round cells through the epithelium. By a process of diapedesis and phagocytosis induced in this manner a healing of pathological lesions is brought about.

The relative merits of intra-nasal and external operation for suppuration of the frontal sinus has led to much discussion. It is now held that the fear of osteomyelitis following external operations is unjustified. Osteomyelitis in this connexion is a rare condition, and has been shown to be due not to the route of the operation, but to the nature of the infection. Unfortunately, bacteriologists have neglected this branch of work and the nature of the bacteria invading the sinus and leading to the disintegration of

bone, has not yet been determined. Opinion appears to be formed concerning the route by which suppuration of the maxillary antrum should be attacked. The intra-nasal access is now held to be unjustifiable, and the operation should be conducted through the canine fossa. This channel of egress enables the rhinologist to remove polypoid growths or foreign bodies and provides him with an admirable means of draining the antrum when a portion of the nasal wall of the antrum below the attachment of the inferior turbinal at its anterior end has been removed.

A notable event in the history of oto-rhino-laryngology and ophthalmology has been the holding of the first congress in Australia. The congress in Melbourne during November, 1918, was attended by representative specialists from all the Australian States and from New Zealand. The members of the staffs of the Eye, Ear and Throat Hospital, the Melbourne Hospital and St. Vincent's Hospital contributed largely to the success of the meeting by valuable demonstrations of practical work and of patients who had been subjected to operative and other forms of treatment.

Sir Thomas Wrightson, an eminent engineer, has devoted his attention for many years to acoustics, and has recently published, together with Professor Arthur Keith, F.R.S., a very valuable book, in which these authors endeavour to explain how sound waves are converted into auditory stimuli. Hitherto the resonance theory of Helmholtz has been generally accepted, for want of a better one. Anatomists who have made a study of the sound transmitting apparatus of the middle ear and of the minute anatomy of the internal ear, the receiving apparatus, have long questioned the correctness of the resonance theory. The student of to-day is likely to discard it in favour of the displacement explanation of Wrightson. The organ of Corti, according to Helmholtz, contains a series of resonators, which serve to analyse the transmitted wave of a compound sound into its constituent primary notes. Wrightson regards the whole organ of Corti as a delicate balance for measuring the accessions and diminutions of pressure which make up the compound wave of sound.

Sir Thomas Wrightson shows mechanically how the to-and-fro movements of the stapes in the *foramen ovale* are transmitted to the basilar membrane, so that

each phase of the sound wave in the air is represented by a movement of the basilar membrane. He further endeavours to show how each motion of the basilar membrane causes a particular flexion or extension of the processes of the hair cells. He asserts that the motions of the cilia of the hair cells correspond exactly to the form of the physical waves of sound in the air. The movements of the cilia serve as stimuli to the endings of the auditory nerve, which sends a nervous impulse to the brain, where cerebral analysis of the sound into its constituents takes place.

Urology.

A remarkable amount of progress has been made in the realms of urology during the past year, and a large amount of valuable literature has appeared, both in the journals devoted to this specialty and in other medical and surgical publications.

The high frequency current now occupies an unassailable position in the treatment of papillary tumours of the bladder. Radium has been proved to be of some value in these conditions when applied locally by means of special applicators. It is, however, neither as easy of application nor as universally successful as the high frequency current. Unfortunately, neither of these methods of treatment is of value in infiltrating malignant growths of the bladder or of the prostate.

It may be said that the treatment of epispadias, *ectopia vesicæ* and hypospadias has now become standardized. Much has been written on the subject of diverticula of the bladder. The past twelve months have witnessed some valuable improvements in regard to diagnosis and to surgical technique. Obstructive lesions at the neck of the bladder (exclusive of general prostatic hypertrophy) have been fully investigated. The value of the prostatic punch of Young in their treatment has been definitely established.

In connexion with the methods of ureteral dilatation for the purpose of facilitating the expulsion of ureteral calculi some careful observations have been recorded and useful progress registered.

The technique of subcapsular nephrectomy has been improved, while valuable suggestions have been made in connexion with the treatment of vesico-vaginal fistulae. The year's record is evidence of the increasing amount of attention that is being bestowed upon this specialty.

Dermatology.

The concomitants of war have focussed the attention of dermatologists on a number of skin eruptions of common occurrence among soldiers. In the treatment of staphylococcal infections of the skin Gregoire and Frusin have introduced a preparation known as stannoxyl, consisting of metallic tin and its oxide. This preparation is free from traces of lead. These authors have employed it with success in furunculosis and acne. Equally good results have been obtained by medical practitioners in England. McDonagh claims to have obtained startling results with colloidal manganese injected intramuscularly. A single injection of three cubic centimetres is said to clear up the boils in three days. Of one hundred cases of boils taken at random, fifty were treated with ordinary remedies, including vaccines, and the remaining fifty with manganese alone. The average duration of the stay in hospital in the first series was fifty days and in the second seven days.

It has been noted that the ova of *Pediculi corporis* are not infrequently found in the pubic hair, a fact of importance in treatment. These ova are greyish-white, and are always attached to the hair at an acute angle. The ova of *Phthirus pubis* are blackish, oval and have their greatest diameter at the upper third. The lower extremity is pointed.

In the treatment of scabies in soldiers baths of sulphur vapour have largely superseded the ordinary method of treatment by ointment.

The treatment of yaws by salvarsan and allied drugs has been found to be successful by Raoul de Boissière in Fiji. As a rule, a single injection suffices to cause the complete disappearance of the lesions. This was found to be the case in 180 out of 182 patients. A further dose, however, was required in many instances, as the lesions recurred. This observer holds the opinion that yaws could be eradicated from Fiji if every patient were given two or three injections of the drug.

Walker states that *granuloma inguinale* is not in itself a venereal disease, but is probably a secondary infection due to the intracellular bacillus discovered by Donovan in 1905. Vincent Pardo gave three injections of salvarsan to a patient without producing a beneficial effect. Improvement followed an intravenous injection of a solution of potassium and anti-

monium tartrate. He found the encapsulated bacilli arranged in long chains. The bacilli are readily differentiated from other bacteria by their wide, clear capsule, and stain well with Giemsa's stain.

The field for treatment by radium has been extended. Among numerous skin conditions successfully dealt with by radium may be mentioned an affection of the lips known as *cheilitis exfoliativa*. This affection is resistant to ordinary treatment. Montgomery came to the conclusion that no other means could have cured his patient.

The causative factor of *erythema nodosum* has now been determined to be tuberculosis. Formerly it was held that the condition was due to rheumatism. Professor Marfin observed its occurrence in tubercular subjects, and frequently in those in whom the infection was still latent. It is held to be the outward sign of a slight, attenuated, curable tuberculosis. Histologically the lesions are indistinguishable from typical tuberculides. The injection into guinea-pigs of an emulsion of the nodule tissue leads to the development of tuberculous infections.

Röntgenology.

The past year has witnessed a general advance in technique in Röntgenology. In addition, it has been noticeable that a greater interest in this branch of medical science has been awakened among general practitioners. The advances in technique have been to a large extent due to work carried out by American specialists. Apparatus has been improved and simplified and energy outputs increased. The interrupterless transformer is displacing the coil in the laboratories of hospitals and of private practitioners.

The Coolidge tube has become firmly established, and its advantages are universally recognized. It is regarded as indispensable in X-ray therapy and in diagnostic work. Coolidge has introduced a new and smaller tube with an air-cooled radiator for use with currents up to 10 milliamperes. This tube completely suppresses all inverse current. It has been adopted as a standard tube in the United States Army for use in all portable outfits and in advanced hospitals in the field. It is not yet available in Australia, but when it arrives it should prove of great value in country and suburban hospitals. Like its parent, it is of the "hot cathode" type.

Greater accuracy has been attained in gastro-intestinal work as a result of the continued improvement in instantaneous Röntgenography. Serial pictures, taken at intervals of from 0.5 to 3 seconds, until 6 to 60 plates have been prepared, enable the radiologist to detect the smallest abnormality in the intestinal tract. This method, however, is expensive, and cannot always be employed. The majority of radiologists prefer to combine a screen examination with serial work.

Gall-stone Röntgenography is still unsatisfactory, and few claim that it offers reliable results in diagnosis. A positive shadow is of importance, but the absence of a shadow by no means excludes the presence of a calculus.

The condition of the *sella turcica* has been freely studied within recent times, and in many instances tumours of the pituitary gland have been demonstrated. The X-ray examination of the cranial sinuses has become an ordinary procedure. This frequently results in revealing a previously undiagnosed suppurative process.

Some ingenious work has been performed in connexion with the localization of foreign bodies. Radiologists are inclined to revert to the old triangular methods, notwithstanding these innovations.

In radiotherapy success has been achieved mainly in three diseases. The first is exophthalmic goitre. The nervous symptoms abate rapidly, and in many cases disappear entirely as a result of the treatment. The second affection is malignant disease of the breast. Heavy doses of Röntgen rays are administered before and after the operation. It is claimed that this method of treatment has reduced the frequency of post-operative recurrence unmistakably. The third condition is fibroid tumour of the uterus. X-ray treatment is replacing operative treatment in America for this condition. Howard Kelly treats all cases uncomplicated with salpingitis, ovarian cyst or retroversion, either by radium or by Röntgen rays.

Little advance has been made in the teaching of Röntgenology at the medical schools. In America there are post-graduate courses in existence. We understand that steps are being taken to institute in the near future a department for research in Röntgenology at the University of Melbourne.

Abstracts from Current Medical Literature.

DERMATOLOGY.

(36) Colloid Degeneration of the Skin.

Lloyd Ketron (*Bulletin of Johns Hopkins Hospital*, July, 1918) reports a case of colloid degeneration of the skin, a condition which was first described by Wagner, in 1866, under the title of colloid millium. He states that it is a rare condition, and Arzt claims that there are only ten cases authenticated by histological examination. The patient was a carpenter, aged 42, who noticed the first manifestations of the disease twelve years previously. The dorsum of both hands, as well as the dorsum of some of the phalanges and the ears, were affected. On the hands the eruption consisted of a thick aggregation of papillomatous lesions, somewhat larger or smaller than a pin's head, and with an elevation of one or two millimetres. They were round, oval or triangular in shape, and occasionally semi-globular ones, with restricted bases, were found. The surfaces of most of the lesions were smooth, flat and frequently had a glazed appearance. In the centre they were brownish or reddish-yellow in colour, and appeared to contain fluid. On pricking one of the lesions with a needle no fluid was exuded. The entire covering of one of the papules was then removed, and a jelly-like, friable, brownish-yellow substance was disclosed embedded in the skin. It was easily expressed, leaving an opening, which rapidly refilled with blood. The histological examination of tissue removed from the dorsum of the hand showed no involvement of the epidermis, with the exception of a flattening of the interpapillary pegs. In the papillary layer of the cutis, and corresponding to the papular elevations, were discrete, round or oval masses of a homogeneous material. One of the most striking pathological features to be observed were peculiar round or oval cells, with vesicular nuclei. They varied in size from that of a lymphocyte to cells four or five times as large, and were embedded in the colloid blocks, or were lying along the connective tissue strands between them. Few in number, they occurred singly or in groups, and in one instance surrounded an opening in a glandular fashion. The cell protoplasm was abundant and granular, and took the stain like colloid material, although less deeply. There was a resemblance between these cells and those occurring in a case of fatty atrophy of the skin seen by the author, which were shown to be macrophages and which had taken up the fat, probably on account of some chemical change which had converted it into a foreign body. Ketron is of opinion that these cells, which he has noted in colloid degeneration of the skin, are macrophages or cells which have ingested the colloid material in an attempt to remove it from the tissues.

(37) Benign Basal Cell Epithelioma of the Scalp.

Numerous examples of tumours of the scalp are recorded in medical literature, and although the late Radcliffe Crocker, in his work on diseases of the skin, gave reference to these cases, and grouped them under the heading of *sarcoma capitis* or *endothelioma capitis* (turban tumours), H. G. Adamson is of opinion that they belong to two distinct classes, one being derived from the subcutaneous tissue, and probably of the nature of sarcomata, the other and much larger group being composed of growths which originate from the epidermis and are basal cell epitheliomata (*Brit. Journ. Dermat.*, July-September, 1918). He endorses the opinion of Dubreuilh and Auché, who were the first to demonstrate that these growths were really of the nature of basal cell epitheliomata, and states that the term endothelioma, as applied to this latter type of growth, is a misnomer. The case reported is that of a man, aged 61 years, in whom the lesions first appeared on the scalp 12 years previously. There were about 40 to 50 tumours on the scalp, varying in size from hempseed to that of a chestnut, of firm consistency, and of the colour of the normal skin. They had a smooth surface, were devoid of hair, and were movable on the skull. Half-a-dozen small growths of a similar nature had been present for thirty years in the skin of the back. Microscopical examination of a section from one of these growths showed that they were composed of sharply circumscribed alveoli, rounded, oval, or irregular in shape. The cells were rounded or oval in shape, with large, deeply staining nuclei, and were closely packed and bordered with a marginal palisade layer, so that the appearances were those of a benign basal cell epithelioma. These sections were identical with those recorded in some examples of Brooke's *epithelioma adenoides cysticum*, occurring in several members of the same family. In this series the mother, the daughter and one son were typically affected with Brooke's *epithelioma adenoides cysticum*, whilst another son had multiple tumours of the scalp, which showed the same microscopical appearances. The author is of opinion that a study of the published cases of multiple *endothelioma capitis* and of those of Brooke's *epithelioma adenoides cysticum* shows that they really belong to the same group. Of the published cases of *sarcoma capitis*, two only have been identified as true cases of sarcoma, viz., those of Oro and those of Marrant Baker.

(38) Röntgenologic Aspects of Hour-Glass Stomach.

According to R. D. Carman, hour-glass stomach is an occasional end result of various gastric lesions, such as ulcer, cancer, adhesions (*Surg., Gynec. and Obstet.*, October, 1918). The term hour-glass is applied to every stomach with a local constriction of its lumen, whether this is due to organic change or to spasm, or to both. Hour-glass stomach may be either congenital or acquired. Congenital hour-glass stomach

is rare, and has not been seen by Carman personally. Acquired hour-glass may be due to organic changes, such as ulcer, ulcer scar, adhesions, cancer, syphilis, corrosives, post-operative scarring, or to spasmodic or functional causes. Two types are recognizable. The first is intrinsic, i.e., cramp, contraction of stomach wall, due to irritation from a gastric lesion, while the second is extrinsic, i.e., cramp of the gastric wall, due to reflex from lesions outside the stomach, such as duodenal ulcer, gall-bladder disease, appendicitis, tabes, lead colic, etc. Pseudo-hour-glass stomach may be observed occasionally in atonic organs, in cases examined while the abdominal muscles are contracted, and also from pressure from a loaded colon. Barium meal examination renders the diagnosis easy, but many of the hour-glass constrictions disappear under anaesthesia and after the administration of belladonna. Carman states that any contraction persisting after the administration of tincture of belladonna in 1 c.cm. doses to its physiological limit is due to ulcer of the stomach or duodenum. Many of the spasmodic hour-glass constrictions are effaced by palpation under the screen.

(39) Localization of Ureteral Stone.

One of the greatest difficulties met with in the radiography of the urinary tract is the differentiation of shadows found along the line of the ureter, especially in its lower third. Herman L. Kretschmer advises the passage of an opaque catheter and a double exposure of the one plate (*Surg., Gynec. and Obstet.*, November, 1918). If the shadow is due to calculus which has not obstructed the catheter it will move equally with the catheter. If, however, it is due to other causes it will move a greater or less distance and alter its relationship to the catheter. This method is easy and quick, and should prove of great help.

(40) Influence of Radium on Cancer Tissues.

James Ewing (*Americ. Journ. Roentgenology*, September, 1918) refers to the paradoxical results met with in the treatment of cancer by means of drugs (e.g., colloidal metals), and various other agents (e.g., thyroid, antisera, tumour proteins, etc.). Radium, however, has a definite effect on cancer cells, and can be relied on to produce the same results if applied through the same filters to the same type of cancer. Radium exerts its full effect on the cell nucleus, and especially on the dividing nucleus, and it inhibits cell growth, producing a peculiar form of liquefaction, necrosis and atrophy. At the same time it has an effect on the surrounding tissues, stimulating the production of granulation tissue, and causing a remarkable exudation of various round cells, the result being a natural and complete healing process. Among the growths which are most susceptible to radium, are the very cellular and rapidly growing forms, e.g., lymphomata and embryonal cancers. Squamous cell carcinoma is very resistant to radium. Benign and fibrous types of tumour are quite resistant.

BIOLOGICAL CHEMISTRY.

(41) Blood Changes in Anaesthesia.

S. P. Reimann and George H. Bloom (*Journ. Biol. Chemistry*, October, 1918) have studied the diminution in the amount of the bicarbonates in the plasma of the blood during anaesthesia. They have estimated the "total acetone bodies" in the blood by means of the method of van Slyke and Fitz, in which the amounts of acetone, acetoacetic acid and beta-hydroxybutyric acid are determined together. Measurements of the quantity of bicarbonates in the blood have been made at the same time. These measurements have been made before and after operation upon 60 patients. Quantitative determinations of the excretion of ketones in the urine were performed on 23 of these patients. In some cases the excretion of phenol-sulphonaphthalein has been ascertained. In 27 of the patients the quantity of catalase in the blood has been estimated before and after surgical anaesthesia. From these data calculations of the theoretical decrease in the carbon dioxide, corresponding to the increase in the amount of ketones have been made. The authors have found increased amounts of ketonic bodies in the blood during anaesthesia and operation. In 10 of the 60 patients the carbon dioxide capacity of the blood was less than 50 c.cm. in 100 c.cm. of plasma, while in only one case was the capacity less than 40 c.cm. carbon dioxide. In the entire series of cases the average increase in total acetone bodies was 25 mg. per 100 c.cm. plasma. This change corresponds to 9.6 c.cm. carbon dioxide in the blood. As the average observed fall of carbon dioxide was 15.9 c.cm. it would appear that the acetone derivatives are not the only factor in diminishing the bicarbonates during anaesthesia. In three-quarters of the cases the catalases were diminished, but the duration of the anaesthesia showed no relation to the fall in the content of catalase. In the cases in which the bicarbonates were diminished the post-operative symptoms were more intense.

(42) Scurvy and Lemon Juice.

A. Harden and S. S. Zilva have succeeded in separating the bulk of the citric acid from lemon juice without diminishing appreciably the antiscorbutic qualities of the residue (*Biochemical Journ.*, October, 1918). The treated lemon juice, which was freed from citric acid by treatment with calcium carbonate and alcohol, was fed in quantities equivalent to 2 c.cm., 3 c.cm., 5 c.cm. and 7 c.cm. respectively to four guinea-pigs. These animals received oats and bran in unlimited quantities and 50 c.cm. of autoclaved full milk per diem. After 80 days the animals were killed by chloroform. The curves of the weights of the animals during the experiments showed that the animal receiving 2 c.cm. just managed to maintain its weight. The animals fed with 2 c.cm. and 3 c.cm. showed slight hæmorrhages in the femoral muscles and slightly enlarged costo-chondral junctions, thus proving the presence of

incipient scurvy. Experiments showed that there was no appreciable lessening of the antiscorbutic quality in the treated lemon juice from that of ordinary lemon juice as a result of fractionating the juice. The treated lemon juice did not, however, retain its full antiscorbutic properties after 14 days in the cold room. The antiscorbutic properties of the treated juice were completely lost after its evaporation to dryness below 40° C. After acidifying the treated lemon juice by adding 0.1% of citric acid the liquid could be evaporated to dryness at 40° C. without loss of the antiscorbutic factor. The administration of the treated lemon juice by subcutaneous injection to guinea-pigs suffering from well-declared scurvy did not produce any amelioration in the condition of the animal, and the progress of the disease was unaltered. Experiments also demonstrated that the previous administration of large quantities of the treated lemon juice previous to placing the animal on a diet leading to the development of scurvy, had no influence in preventing the onset of the disease. The authors succeeded in producing a disease in monkeys by using a diet theoretically complete in every respect, but lacking the antiscorbutic elements. The clinical picture and the course of the disease in monkeys was almost identical with that in human persons. The administration of treated lemon juice, corresponding to 980 c.cm. of ordinary lemon juice, during five days to a monkey suffering from scurvy led to rapid improvement.

(43) Inorganic Sulphates in Nutrition.

A. L. Daniels and J. K. Rich (*Journ. Biol. Chemistry*, October, 1918) have endeavoured to obtain data which might throw light on the part played by the inorganic sulphates in nutrition, and to determine whether the animal organism can synthesize cystine from inorganic sulphates. In studies pertaining to the value of different proteins for nutritive purposes Osborne and Mendel have shown that cystine is a limiting factor. This is especially the case with casein. The addition of cystine to a diet containing small amounts of casein has led to a resumption of growth in rats previously stunted on a similar ration lacking cystine. Young rats, varying in weight from 40 to 80 gm., have been sorted into two groups. One group has served for a control. The rats have received diets containing 12%, 15% and 18% of casein. One group has been given rations from which sulphates have been absent, while the other group has received potassium sulphate in amount equivalent to the sulphur present in the ration containing 18% of casein, plus a salt mixture similar to that in whole milk. One gramme of each ration has supplied 4.85 calories. Butter fat and an alcoholic extract of wheat embryo have furnished the vitamins. The curves of growth reveal that the two groups of rats which have received the rations with 18% casein have grown at the same rate. The authors conclude that the addition of inorganic sul-

phates to a diet supplying sufficient protein containing cystine fulfills no important nutritive function. Similarly, growth was comparable in the two groups fed upon rations containing 15% casein. When, however, the rations contain only 12% casein the rate of growth is much reduced in both groups. The authors infer that rats are unable to use inorganic sulphates to replace the necessary cystine.

(44) Geological Factors in Sewage Purification.

E. A. Cooper and A. E. Cooper have studied the effect of using different kinds of water for the dilution of sewage in carrying out the test on the dissolved oxygen absorption during the bacterial oxidation of sewage during five days at 18° C. (*Biochemical Journ.*, October, 1918). This test, which is known as the Rideal-Stewart test, is considered by the majority of chemists as giving a reliable index to the future behaviour of the sewage under natural conditions. The test is carried out with standard conditions as to time, temperature and dilution. The authors have found that the source of the water used in diluting the sewage greatly influences the character of the results. They have used as diluents distilled water, various tap waters and different stream waters. They find that the dissolved oxygen absorption figure for five days for a sewage effluent diluted with hard tap water (chalk) has been only one-twentieth to one-half the figure obtained for the same effluent diluted with distilled water or with river water. The figure has been lower when the effluent is diluted with river water than with distilled water, and has also been lower when the dilution was made with a ferruginous, peaty tap water. The author suggests that in the routine examination of sewage effluents more attention should be given to the condition of the stream below the point of discharge. As a check on the test for effluent they consider it desirable to determine regularly the dissolved oxygen absorption figure for the undiluted water collected from the river or stream well below the point of pollution. Care should be taken to ensure that the sample is taken where the effluent and river water are thoroughly mixed together.

(45) Salts in Green Vegetables.

H. G. McClugage and L. B. Mendel (*Jorn. Biol. Chemistry*, August, 1918) have carried out metabolism experiments in which they have observed the intake and output of nitrogen, calcium and magnesium, in order to study the suitability of green vegetables as a source of inorganic salts. They find that in dogs, the calcium in carrots and in spinach is not as well utilized as that in milk or in calcium carbonate. They also note that there is a loss of nitrogen when carrots and spinach are added to a diet which has been formerly satisfactory. The authors raise doubts as to the efficacy of the addition of green vegetables to the diet of young infants. As a source of calcium, these bodies are inferior to calcium carbonate or milk.



Naval and Military.

APPOINTMENTS.

The following appointments, promotions, etc., have been announced in the *Commonwealth of Australia Gazette*, No. 9, of January 23, 1919.

Australian Imperial Force.

Second Military District.

McLaren, Major (temporary Lieutenant-Colonel) W. W., Army Medical Corps (now Officer Commanding Australian Camel Field Ambulance), to command Fifth Light Horse Field Ambulance, and to retain the temporary rank of Lieutenant-Colonel whilst so employed. Dated 1st July, 1918.

Third Military District.

Simmons, Major W. F., from Sixth Field Ambulance, to command First Field Ambulance, and to be temporary Lieutenant-Colonel whilst so employed. Dated 6th October, 1918.

Australian Army Medical Corps.

To be Captains—

Captain (temporary Major) N. M. A. Alexander, Australian Army Medical Corps, and to be temporary Major whilst employed with the Samoan Medical Relief Expedition. Dated 14th November, 1918.

Kenneth Willoughby Bollen, Richard Longford Thorold Grant, Colin Gurner, Leslie James Kelpert, Leslie Wadmore Linn, Philip Santo Messent, Ian McNeill, Harry Roy Pomeroy, Douglas Robson Wallmann and Laurence Algernon Wilson. Dated 26th November, 1918.

William Kendall Collins. Dated 9th December, 1918.

APPOINTMENTS TERMINATED.

Second Military District.

Lieutenant-Colonel W. E. Grigor, O.B.E.. Dated 13th December, 1918.

Major J. B. F. McKenzie. Dated 13th December, 1918.

Captain P. S. Parkinson. Dated 16th December, 1918.

Third Military District.

Lieutenant-Colonel E. T. Brennan, D.S.O., M.C.. Dated 24th January, 1919.

Captain N. R. Mathews, M.C.. Dated 11th December, 1918.

Captain A. W. Bowman. Dated 10th December, 1918.

Fourth Military District.

Captain J. H. Leon. Dated 4th May, 1916.

Australian Military Forces.

GRANT OF HONORARY RANK.

The Governor-General in Council has approved of the following:—

The undermentioned, who have served in the Australian Imperial Force as Commissioned Officers, shall have the rank held by them in the Australian Imperial Force confirmed as honorary rank in the Australian Military Forces, as follows:—

Officers who, on appointment for active service outside Australia, were serving, and are now serving, in the Australian Military Forces.

Second Military District.

To be Honorary Lieutenant-Colonel—

Captain W. E. Grigor, O.B.E., Australian Army Medical Corps. Dated 18th September, 1917.

To be Honorary Major—

Captain J. B. F. McKenzie, Australian Army Medical Corps. Dated 1st December, 1916.

Fifth Military District.

To be Honorary Major—

Captain J. P. Kenny, Australian Army Medical Corps. Dated 1st March, 1916.

The undermentioned, who has served in the Australian Imperial Force as Commissioned Officer, to be appointed to the Reserve of Officers (temporarily), and to be granted honorary rank equivalent to that held by him in the Australian Imperial Force:—

Officer, who on appointment for active service outside Australia, was not serving in the Australian Military Force.

Second Military District.

To be Honorary Captain—

H. O. Maher. Dated 1st March, 1916.

CANCELLATION, GRANT OF HONORARY RANK, PROMOTION AND APPOINTMENT.

The notification which appeared in Executive Minute No. 590—1918, promulgated on page 1,770 of *Commonwealth of Australia Gazette*, No. 135, dated August 29, 1918, referring to Colonel (temporary Surgeon-General) R. H. J. Fetherston, is cancelled.

Colonel (temporary Surgeon-General) R. H. J. Fetherston to vacate the position of Director-General, Australian Army Medical Services, and to be granted the honorary rank of Brigadier-General, for specially meritorious service in Australia during the war. Dated 31st December, 1918.

Lieutenant-Colonel (Honorary Colonel) (temporary Brigadier-General) G. Cuscaden, Deputy Director-General, Australian Army Medical Services, is promoted to the substantive rank of Colonel, and appointed Director-General, Australian Army Medical Services (temporarily), and retain his temporary rank of Brigadier-General whilst so employed. Dated 1st January, 1919. (Ex. Min. No. 73.)

We regret to record the death of Dr. Clive Newland, which took place on January 25, 1919, as a result of an accident. Dr. Newland was riding on a motor cycle, in answer to an urgent call. It is supposed that he failed to hear an oncoming train near McLaren Vale, on account of a strong head-wind. He was still alive when found, but died after removal to Adelaide, without regaining consciousness.

Medico-Legal.

CARBON MONOXIDE POISONING.

An inquest was held on September 28, 1918, by Mr. H. Richardson Clark, Coroner at Parramatta, New South Wales, into the cause of death of Lucy Adeline Wilson, who was found dead in her bed on September 11, 1918.

Dr. Robert Edmund Woolnough stated in evidence that he had been called to the house of Mr. James Wilson, at Belmore, and, on arrival, found his daughter dead. Deceased was lying on a bed under the bed-clothes, clothed in a night-dress and singlet. There was pink and white froth about the mouth and nostrils. *Rigor mortis* was well marked and the body was cold. She had probably been dead about seven or eight hours. There were no marks of violence. Her sister had informed witness that deceased had taken a hot bath the night before. Deceased was said not to have been ill before, but had always been anæmic and pale. Witness stated that the gauze of the Bunsen burner in the bath heater appeared to be dusty, but the flame seemed to be a good blue flame.

On the same day, acting on instructions from the Coroner, witness performed a post mortem examination on the body of the deceased. He found the brain normal. The subcutaneous tissues and muscles were somewhat brighter and pinker than natural. The heart was somewhat enlarged. On the anterior surface there was some organized lymph, causing roughening of the surface. The heart muscle was more friable than normal. The valves were normal, but the blood in the heart was more fluid than usual. There were slight adhesions at the apex of the left lung. The lung tissue was of a pink colour, and on section a pink blood-stained fluid was expressed. The other organs were normal, except the left ovary, which was slightly cystic. A specimen of the heart blood was collected, sealed and handed to a police officer for examination by the Government Analyst. Witness has since heard that the blood contained small quantities of carbon monoxide. From the post mortem examination, the presence of carbon monoxide in the blood, and in view of the circumstances surrounding the death of deceased, he expressed the opinion that the cause of death was poisoning by carbon monoxide, accelerated by a weakness of the heart. Dr. Newton and witness's brother, Dr. Sydney James Woolnough, were present at the post

mortem examination, and they concurred with him in the opinion concerning the cause of death.

James Alexander, a sergeant of police, gave evidence of having been called in, and of having found deceased dead in bed. He described the position of the deceased girl when seen. He telephoned to Dr. Woolnough. He also made an examination of the both-room. It contained a gas water-heater, supplied by Messrs. Anthony Hordern and Sons. It was composed of seven Bunsen burners, covered with brass wire gauze. On the day following the death, witness and a brother of the deceased made a test of the gas water-heater. The gas was lighted and the water turned on. The room door was closed, and the window opened about six inches at the top, as it had been when first examined by Dr. Woolnough. Everything in connexion with the heater appeared to be in good order. They remained in the room about forty minutes, and then went into the landing. They did not feel any ill effects. The temperature in the bathroom was about 5° F. higher than outside.

Mr. James Wilson, the father of the deceased, gave evidence to the effect that his daughter was 27 years of age. Her life was not insured and she had no money or property. She was a happy, bright girl. She had recently been greatly upset at the news that her friend had been killed at the war. On September 10 he saw her preparing a meal for his brother. Witness went out the same evening, and returned to his home at 11.15 p.m., and went to bed, everything being apparently in order. In the morning his daughter, Bertha, awakened him and said: "Dad, something terrible has happened to Lucy. I am afraid to look at her." He went with his wife into the room shared by his two daughters, and saw deceased lying dead in bed. He immediately sent for Sergeant Alexander.

The gas water-heater had been in his house for eight years. It had been fitted up by an expert. He asked for an examination of the heater by an expert.

Mrs. Wilson, the mother of the deceased, stated that she had seen her daughter alive at 10.15 p.m., on September 10, 1918. Deceased said that she would take a hot bath and go to bed. Witness thought that she had done so, as the gas flame in the kitchen went down. On passing the door of her daughters' room, on her way to bed at 11 o'clock, she heard what she thought was snoring. As this was unusual she went back after two minutes and listened at the door. The snoring had ceased. She was certain that the noise came from her deceased daughter, whose bed was close to the door. On the following morning she saw her daughter dead in bed.

Miss Bertha May Wilson, sister of the deceased, stated that she had never known her sister to have faintness or heart weakness. On September 10, 1918, she returned to her home at 9 p.m., and saw deceased. They went upstairs at 10.15. Witness was tired, undressed quickly and went to bed. Her sister said that she would have a hot bath. Witness was not aware whether deceased undressed while she was present. She could not remember who lighted the gas. She did not hear the gas water-heater. She fell asleep immediately she was in bed. She awakened at 7 in the morning, and saw that her sister looked strange. She then told her parents. The window of the bed-room was open. She felt quite well when she awoke. Her sister had never complained of having felt ill in the bath-room. Witness took two hot baths a week and had never felt any bad effects.

Dr. Thomas Cooksey, Government Analyst, submitted a memorandum to the effect that the sample of blood analysed contained less than 25% of carbon monoxide. Dr. Arthur Palmer attached to this memorandum a note to the effect that the small amount of carbon monoxide was possibly due to the length of time of survival in fresh air. In such cases it was not infrequent to find little or none.

The inquest was adjourned for the purpose of an examination being carried out on the gas water-heater. The Chief Gas Examiner of the Department of Labour and Industry examined the room and the heater. The room was 6 feet 7 inches in length, 6 feet wide and about 9 feet high. The door did not fit closely at the bottom. Ventilation was provided, equal to an opening of approximately 7½ square inches. The window was open about 9 inches from the top. The gas heater consumed about 75 cubic feet of gas per hour. The products of combustion from the heater were conducted by means of a three-inch flue through the ceiling into the roof space. On lighting the gas he found an escape of

burnt products into the room for about one minute. As soon as the flow of hot water was established, no trace of any leakage of the products of combustion into the air could be discovered. He employed the carbon tetrachloride-ammonia test. The burners were giving an excellent "atmospheric flame." The products of combustion were rising freely into the roof space. He had been unable to reproduce the circumstances which had led to a dangerous condition in the bath-room.

The Coroner returned a verdict that the deceased had died from poisoning by carbon monoxide, accidentally inhaled while in a hot bath.

The following have been elected as members of the New South Wales Branch of the British Medical Association:—

William Robert Thrower, Esq. (L.R.C.P., Edin., 1892, L.R.C.S., Edin., 1892, L.F.P.S., Glasg., 1892), Guildford, New South Wales.

Walter Leopold Calov, Esq. (M.B., Ch.M., Univ. Sydney, 1918), Toowoomba, Queensland.

Frank Norman Waddell, Esq. (M.B., Ch.M., Univ. Sydney, 1918), Chesterfield Road, Epping, New South Wales.

John George Hunter, Esq. (M.B., 1915, Univ. Sydney), of 231 Edgecliff Road, Woollahra; and Thomas Arthur Kidston, Esq. (M.B., Ch.M., 1918, Univ. of Sydney), of No. 3, Erith Street, Mosman, have been nominated for election as members of the New South Wales Branch of the British Medical Association.

Correspondence.

THE TREATMENT OF RETURNED MEN.

Sir,—I regret that my absence from Sydney has delayed this rejoinder to the letter from "Returned Man" in your issue of January 11.

I had complained of serious misrepresentation of a previous utterance of mine—of having a statement definitely attributed to me which I never made and never held. For this misrepresentation your correspondent makes no apology, a courtesy which I had every right to expect. Instead of this he has attempted to make great play with my original statement that I had been "uncomfortable" to see the Medical School "fuller than ever." It would have been wiser if he had taken the trouble to understand from the context of my letter precisely what it was that occasioned my discomfort. It is perfectly obvious that the previous discomfort, then avowed, could not have been due to any aversion on the part of the students of medicine from a course of action from which they had hitherto been officially debarred by the Military Authorities themselves. I had felt "uncomfortable" because of my individual doubt of the wisdom of the military embargo on the enlistment of medical students, in view of just that sense of the overwhelming need for men to which your correspondent assumes that I must have been oblivious.

My original letter was written in order to make public my personal opinion that, now that the official embargo was removed, medical students should regard themselves as entirely free to act as duty and conscience should dictate.

I may say, in conclusion, that I feel sure that "Returned Man" would not really wish to make me say what I did not say, and I, on the other hand, assure him that I respect and admire the chivalrous and patriotic spirit which evidently underlies his controversial demonstrations.

Yours, etc.,

J. T. WILSON.

Bay View, Pittwater, New South Wales,
January 26, 1919.

Proceedings of the Australian Medical Boards.

QUEENSLAND.

The following have been registered under the provisions of *The Medical Act of 1867* as duly qualified medical practitioners:—

Barrack, Bruce Boyle, Brisbane Hospital, M.B., Univ. Sydney, 1918.

Monckton, Henry Holland, Murgon, L.S.A., Lond., 1897.

SOUTH AUSTRALIA.

The following have been registered under the provisions of the *Medical Act, 1880*, as duly qualified medical practitioners:—

Richard Longford Thorold Grant, M.B., B.S., Adel., 1918.
 Raphael West Cilentio, M.B., B.S., Adel., 1918.
 Phillip Santo Messent, M.B., B.S., Adel., 1918.
 Kenneth Willoughby Bollen, M.B., B.S., Adel., 1918.
 Leslie James Keipert, M.B., B.S., Adel., 1918.
 Ian McNeil, M.B., B.S., Adel., 1918.
 Douglas Robson Wallmann, M.B., B.S., Adel., 1918.
 Phyllis Dorothy McGlew, M.B., B.S., Adel., 1918.
 Leslie Wadmore Linn, M.B., B.S., Adel., 1918.
 Laurence Algernon Wilson, M.B., B.S., Adel., 1918.
 Collin Gurner, M.B., B.S., Adel., 1918.

Medical Appointments.

The appointment of Dr. George Mervyn Hay (B.M.A.) as Government Medical Officer at Peak Hill, New South Wales, is announced in the *New South Wales Government Gazette* of January 17, 1919.

Dr. Peter Gorrie (B.M.A.) has been appointed Medical Officer at Port Augusta Hospital, South Australia.

The appointment of Dr. A. E. Gibbes (B.M.A.) as Second Government Medical Officer for Sydney (Office of the Director-General of Public Health) has been confirmed.

The resignation by the Honourable H. M. Doyle, L.R.C.P., M.R.C.S., M.L.C., of his position as a Government Representative on the Board of Directors of the Newcastle Hospital, New South Wales, has been accepted.

Medical Appointments Vacant, etc.

For announcements of medical appointments vacant, assistants, locum tenentes sought, etc., see "Advertiser," page xiii.
 Royal Australian Naval Service: Ten Commissions as Surgeons.

Medical Appointments.

IMPORTANT NOTICE.

Medical practitioners are requested not to apply for any appointment referred to in the following table, without having first communicated with the Honorary Secretary of the Branch named in the first column, or with the Medical Secretary of the British Medical Association, 429 Strand, London, W.C.

Branch.	APPOINTMENTS.
VICTORIA. (Hon. Sec., Medical Society Hall, East Melbourne.)	All Friendly Society Lodges, Institutes, Medical Dispensaries and other Contract Practice. Australian Prudential Association Proprietary, Limited. Mutual National Provident Club. National Provident Association.
QUEENSLAND. (Hon. Sec., B.M.A. Building, Adelaide Street, Brisbane.)	Australian Natives' Association. Brisbane United Friendly Society Institute. Cloncurry Hospital.
TASMANIA. (Hon. Sec., Macquarie Street, Hobart.)	Medical Officers in all State-aided Hospitals in Tasmania.

Branch.

APPOINTMENTS.

SOUTH AUSTRALIA. (Hon. Sec., 3 North Terrace, Adelaide.)	Contract Practice Appointments at Renmark. Contract Practice Appointments in South Australia.
WESTERN AUSTRALIA. (Hon. Sec., Health Department, Perth.)	All Contract Practice Appointments in Western Australia.
NEW SOUTH WALES. (Hon. Sec., 30-34 Elizabeth Street, Sydney.)	Australian Natives' Association. Balmalm United Friendly Societies' Dispensary. Canterbury United Friendly Societies' Dispensary. Friendly Society Lodges at Casino. Friendly Society Lodges at Lithgow. Friendly Society Lodges at Parramatta, Auburn and Lidcombe. Leichhardt and Petersham Dispensary. Manchester Unity Oddfellows' Medical Institute, Elizabeth Street, Sydney. Marrickville United Friendly Societies' Dispensary. New South Wales Ambulance and Transport Brigade. Newcastle Collieries—Killingworth, Seaham Nos. 1 and 2, West Wallsend. North Sydney United Friendly Societies. People's Prudential Benefit Society. Phoenix Mutual Provident Society.
NEW ZEALAND: WELLINGTON DIVISION. (Hon. Sec., Wellington.)	Friendly Society Lodges, Wellington, New Zealand.

Diary for the Month.

Feb. 4.—Tas. Branch, B.M.A., Council.	Feb. 25.—N.S.W. Branch, B.M.A., Medical Politics Committee; Organization and Science Committee.
Feb. 5.—Vic. Branch, B.M.A.	Feb. 26.—Vic. Branch, B.M.A., Council.
Feb. 5.—Federal Committee of the B.M.A. in Australia.	Feb. 27.—S.A. Branch, B.M.A.
Feb. 7.—Queensland Branch, B.M.A.	Feb. 28.—Queensland Branch, B.M.A., Council.
Feb. 11.—N.S.W. Branch, B.M.A., Ethics Committee.	
Feb. 13.—Vic. Branch, B.M.A., Council.	
Feb. 14.—Queensland Branch, B.M.A., Council.	
Feb. 14.—S.A. Branch, B.M.A., Council.	
Feb. 18.—Tas. Branch, B.M.A., Council.	
Feb. 18.—N.S.W. Branch, B.M.A., Executive and Finance Committee.	

EDITORIAL NOTICES.

Manuscripts forwarded to the office of this journal cannot under any circumstances be returned.

Original articles forwarded for publication are understood to be offered to *The Medical Journal of Australia* alone, unless the contrary be stated. All communications should be addressed to "The Editor," *The Medical Journal of Australia*, B.M.A. Building, 30-34 Elizabeth Street, Sydney, New South Wales.

The Honorary Librarian of the New South Wales Branch of the British Medical Association notes that the following numbers of *Surgery, Gynecology and Obstetrics* are missing from the library files:—

1915: August, October and December.
 1916: February, April and November.

1917: March.
 Members who have borrowed these journals, are requested to return them as soon as possible, to enable the completed volumes to be bound.